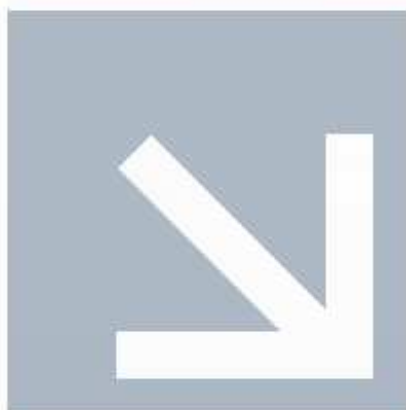
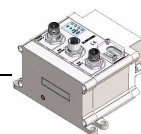




Mod. TCxA
AS-interface
FIELDBUS
MODULE
FOR
PNEUMATIC
MANIFOLD
VALVES
&
I/O SIGNAL

- **AS-interface remote Bus using M12 connectors, dual supply systems**
- **Integrated connection to manifold valves - ISO VDMA & Compact Series**
- **16 coils max capability**
- **16 digital input max capability**
- **Optical Diagnostic Monitor**
- **IP 65 protection grade**

Automation

rev.05a8

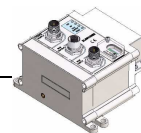


Table of Contents

Important Note	3
Legend of Symbols	4
Terms Definition	4
System description	5
Module Specifications	6
Module installation	7
P10 Compact manifold dimentions	7
P15 Compact manifold dimentions	8
ISO VDMA manifold dimentions	9
Connector pin assignement	9
Module Power	10
Network topology	12
How the Module I/O Capability	12
Output Manifold valves consumes-reception data	13
Auxiliary Digital INPUT (max 2 modules) produces-transmission data.	13
Module Diagnostic and Status indicators	14
Valves Coil & Input/Output Slot Allocation	14
Modules Assembly System	15
Auxiliary Digital Input Modules	16
Auxiliary Digital Input Modules Specifications	16
ASi FieldBus Accessories ordering code	17
Identification Label	17
Conformity Declaration	17
System configuration examples	18
Dangers and residual risks	19
Dangers Caused by Improper use	19
Correct and Incorrect Use	19
Frequency of programmed maintenance	19
Instructions regarding removal / elimination of waste materials	19
Fieldbus ordering string definition	20

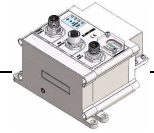


Every conceivable measure has been taken to ensure the correctness and completeness of this documentation. However, as errors can never be fully excluded we would appreciate any information or ideas at any time.

/-----/

We wish to point out that the software and hardware terms as well as the trademarks of companies used and/or mentioned in the present manual are generally trademark or patent protected.

Copyright Univer S.p.A. all rights reserved



Important Note

To ensure fast installation and start-up of the units described in this manual, we strongly recommend that the following information and explanations are carefully read and abided by.

Personnel Qualification

The use of the product detailed in this manual is exclusively geared to specialists having qualifications in PLC programming, electrical specialists or persons instructed by electrical specialists who are also familiar with the valid standards. UNIVER S.p.A. declines all liability resulting from improper action and damage to UNIVER S.p.A. products and third party products due to non-observance of the information contained in this manual.

Intended Use

For each individual application, the components supplied are to work with a dedicated hardware and software configuration. Modifications are only permitted within the framework of the possibilities documented in the manuals.

All other changes to the hardware and/or software and the non-conforming use of the components entail the exclusion of liability on part of UNIVER S.p.A.

Please direct any requirements pertaining to a modified and/or new hardware or software configuration directly to UNIVER S.p.A.

Safety Notes

Attention

Switch off the system prior to working on bus modules!

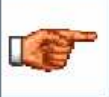
In the event of deformed contacts, the module in question is to be replaced, as its functionality can no longer be ensured on a long-term basis.

ESD (Electrostatic Discharge)

The modules are equipped with electronic components that may be destroyed by electrostatic discharge. When handling the modules, ensure that the environment (persons, workplace and packing) is well grounded. Avoid touching conductive components, e.g. gold contacts.



Legend of Symbols

		Important Note
		Attention Danger
		More Information
		Recycling / Recyclable Material

Terms Definition

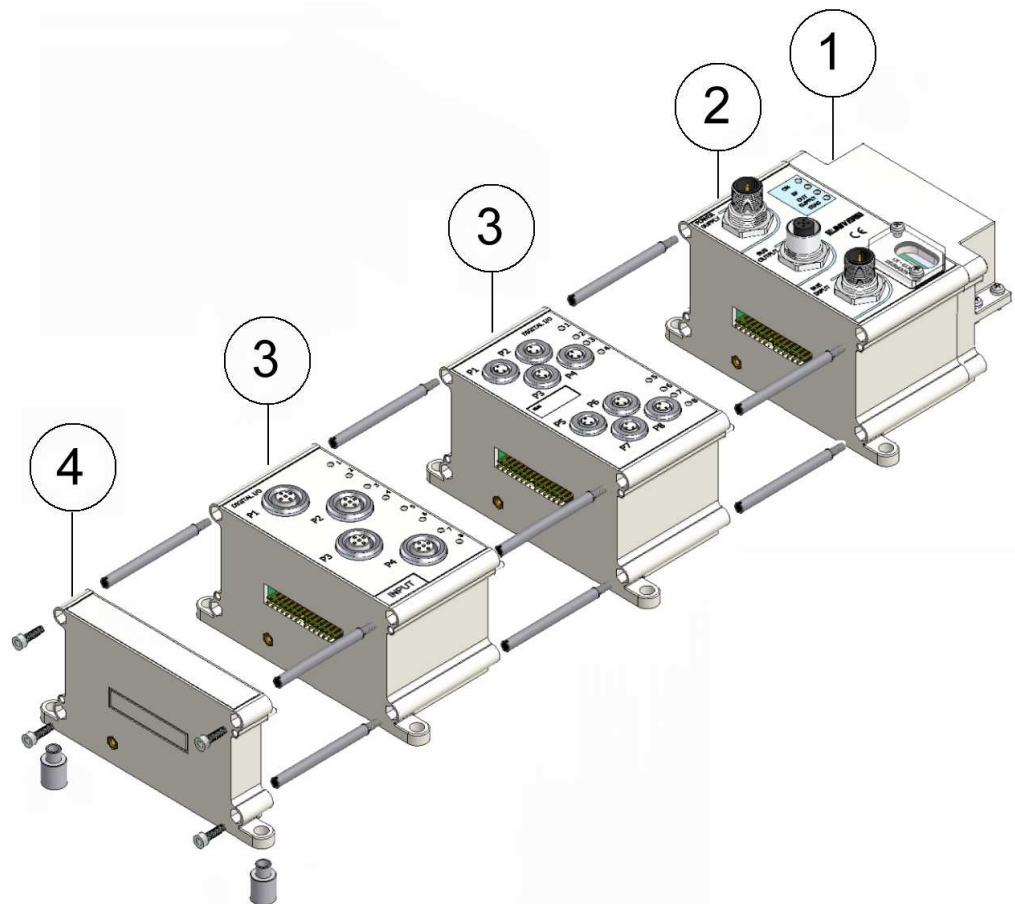
DI	Digital Input
DO	Digital Output
I/O	Input/Output
HW	Hardware
LSB	Least Significant Digit
MSD	Most Significant Digit
VLS24	Logic & Sensor power supply
VA24	Output power supply
Com rate	Rate of communications between devices on the network.

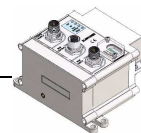


System description

The TCxA is a modular fieldbus slave device for controlling manifold valve and digital input and output which use **ASInterface** fieldbus.

The system structure here described consists of an MANIFOLD OUTPUT INTERFACE (1), of an FIELDBUS module (2) of an AUXILIARY DI modules (3), the end module (4) completes the system.





Module Specifications

FieldBus Data	AS-interface vers. 2.11
Bus Input Connector	Circular M12 Male 5 pins
Bus Function Display	AS-i Diag _ Red AS-I Supply Active _ Green
Auxiliary Function display	Out Supply _ Green
Address Slave	31 slave mode
Communication Rate	167kbps

Electrical Data	
AS-interface Logic & Inputs Voltage Supply	26.5-31.6 Vdc
AS-interface Logic & Inputs Current Supply	250mA @ 20°C
Output voltage Supply VA24	24 Vdc + 15% -10% (valves coil range)
Output Current VA24 (all output)	1A max - overload protected
Output Manifold Coils Valves Capability	8 output cod. TCxA0008 16 output cod. TCxA0016
Auxiliary Digital Input Capability	8 input M8 cod. TCxA08808 16 input M8 cod. TCxA16816 8 input M12 cod. TCxA08S08 16 input M12 cod. TCxA16S16

Environmental Conditions	
weight	350g
Overall Dimentions	85 x 123 x 75 mm
MTBF - Mean Time Between Failures	197.359 Hours 50°C
Protection Degree	IP 65 IEC 60529
Relative humidity	5 to 85% IEC 60068-2-30
Operating Temperature	5°C ÷ 50°C IEC 60068-2-1
Storage Temperature	-25°C ÷ 80°C IEC 60068-2-2
Vibration	5g tested 10-500Hz IEC 60068-2-6
Shock operating	22g IEC 60068-2-27

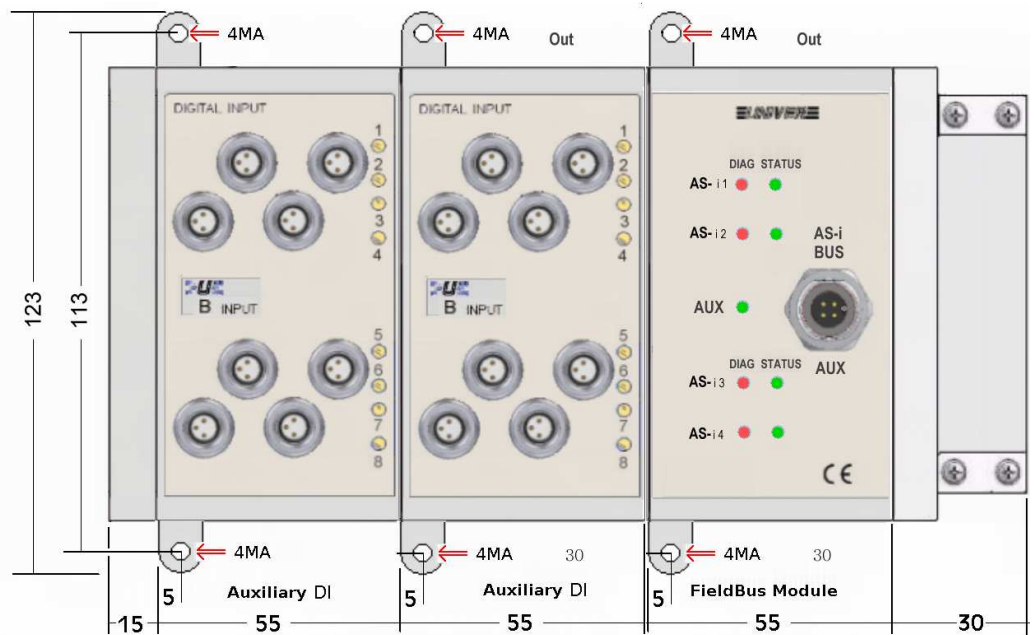


Module installation

Before installing the module, verify that all its parts are intact and have not been damaged during transport, pay attention to the overall dimensions.

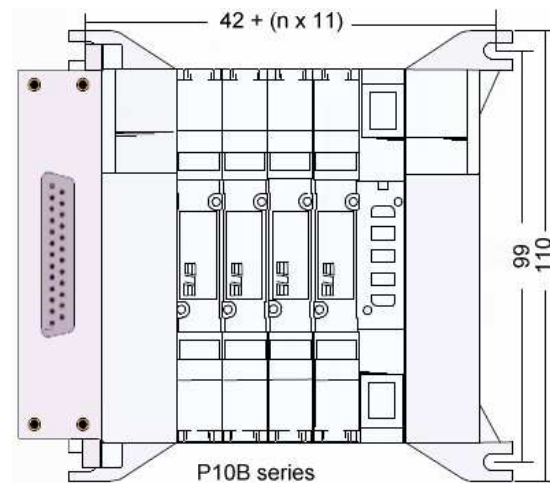


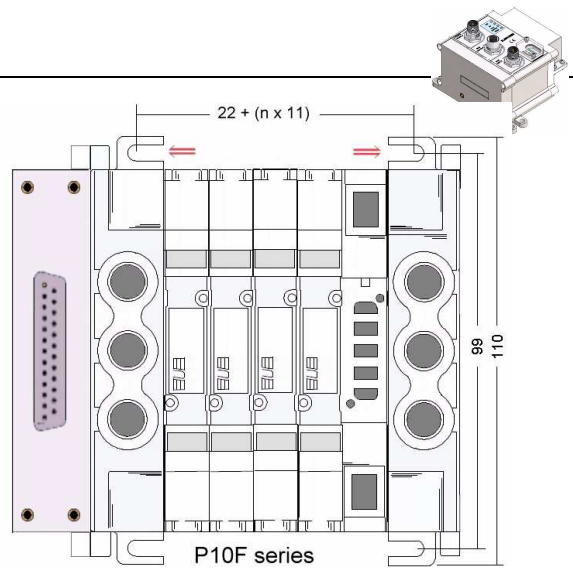
We do recommend to fix the device in the specified hole with M4 screws on a single metal surface to grant a good ground connection



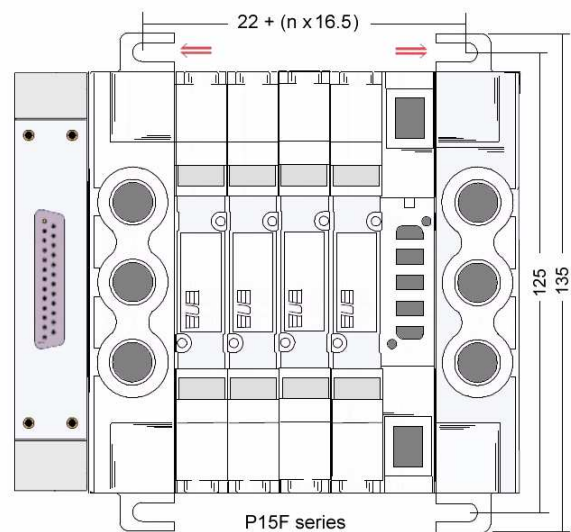
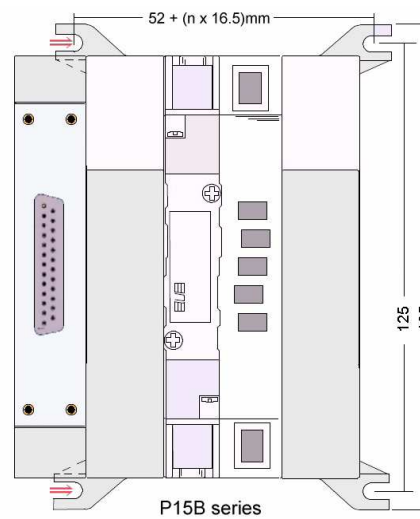
The overall length changes according to the numbers of the auxiliary I/O modules used and manifold valves type.

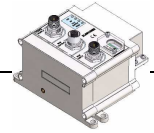
P10 Compact manifold dimensions



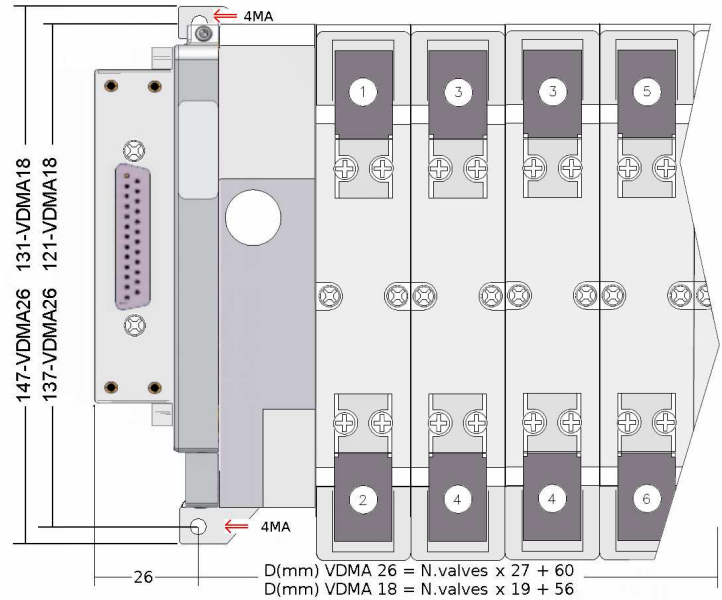


P15 Compact manifold dimentions

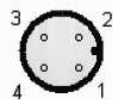




ISO VDMA manifold dimensions



Connector pin assignment



AS-interface
Bus In (MALE)
Looking into pins

Pin	Function
1	AS-interface +
2	VA0
3	AS-interface -
4	VA24



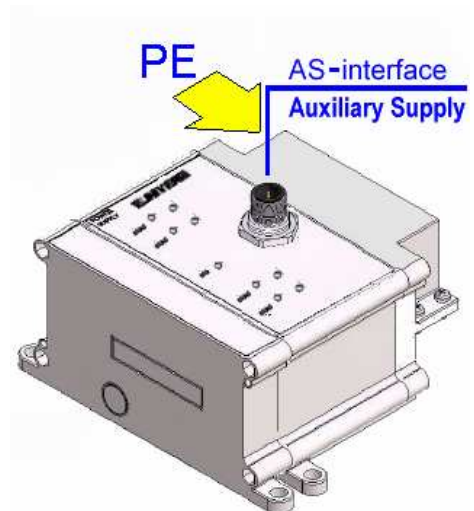
The PE connection has to be connected externally to the ground



Module Power

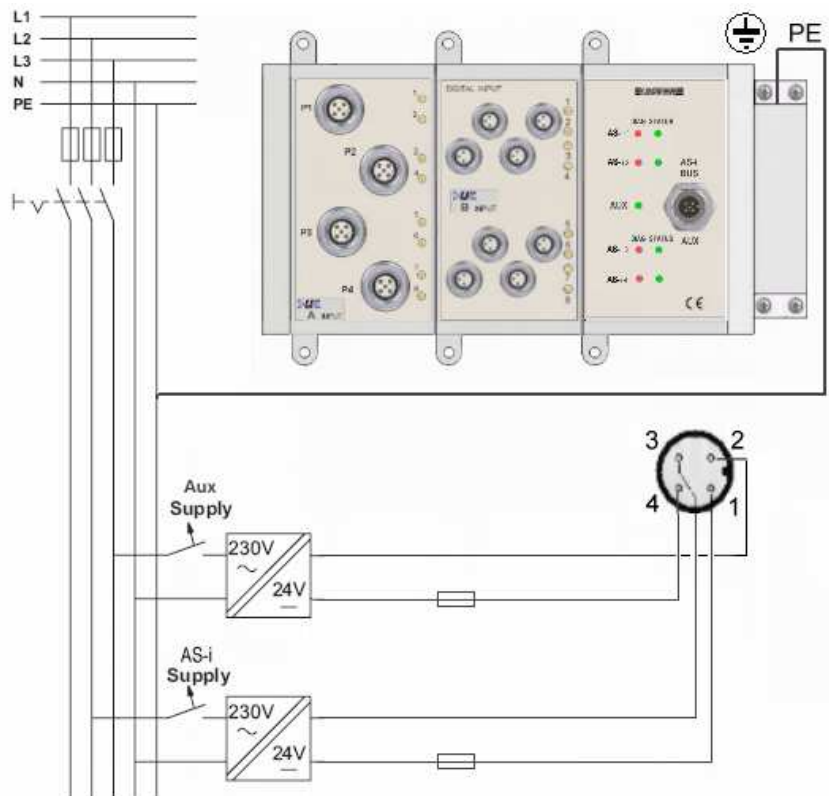


Connect the module to the appropriate ASi network cable
The PE connection has to be connected externally to the ground



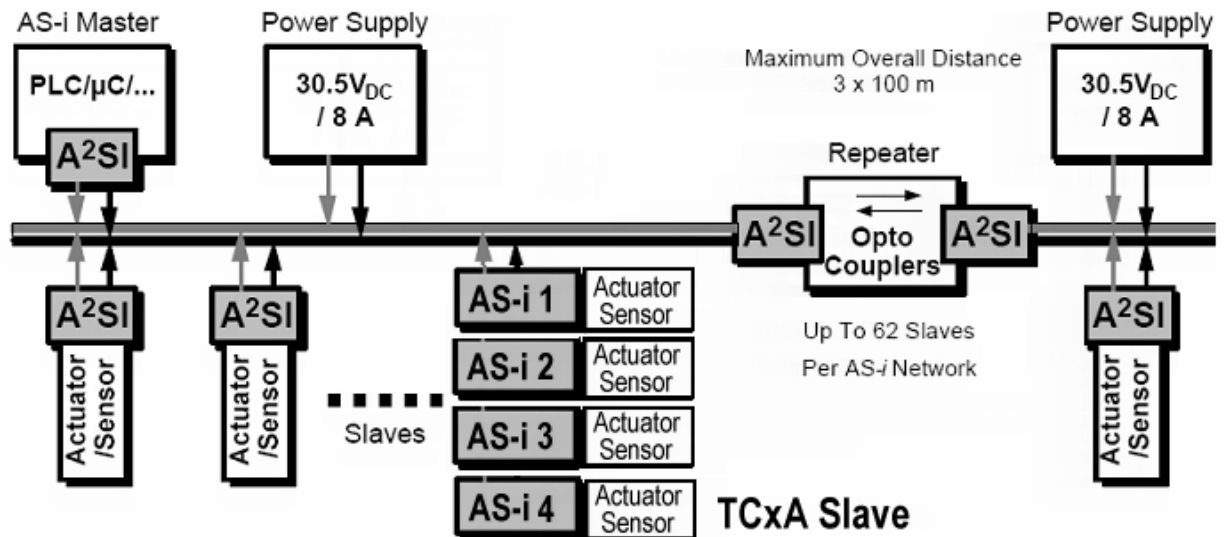
The fieldbus module requires a dual power supply, the fieldbus AS-I supply and the 24 Vdc supply (-10% or +15 %) for output manifold valves.

Dual Supply System





Network topology



How the Module I/O Capability

Module Code	Input/output max capability	AS-i 1	AS-i 2	AS-i 3	AS-i 4
TCxA0008	8 coil max	4DI-4DO	4DI-4DO	-	-
TCxA0016	16 coil max	4DI-4DO	4DI-4DO	4DI-4DO	4DI-4DO
TCxA08808	8 input M8+8 coil max	4DI-4DO	4DI-4DO	-	-
TCxA16816	16 input M8+16 coil max	4DI-4DO	4DI-4DO	4DI-4DO	4DI-4DO
TCxA08S08	8 input M12+8 coil max	4DI-4DO	4DI-4DO	-	-
TCxA16S16	16 input M12+16 coil max	4DI-4DO	4DI-4DO	4DI-4DO	4DI-4DO

	AS-i1				AS-i2				AS-i3				AS-i4			
Bit	00	01	02	03	00	01	02	03	00	01	02	03	00	01	02	03
DI	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
DO	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16



The communicator module TcxA is designed to connect input module which are optional.



Output Manifold valves consumes-reception data.

The manifold output Byte-Bit definition is follows:

Coil Position	Valve Function	AS-i – Bit Consumes
1	side 14	AS-i 1 - 0
2	side 12	AS-i 1 - 1
3	side 14	AS-i 1 - 2
4	side 12	AS-i 1 - 3
5	side 14	AS-i 2 - 0
6	side 12	AS-i 2 - 1
7	side 14	AS-i 2 - 2
8	side 12	AS-i 2 - 3

Coil Position	Valve Function	AS-i – Bit Consumes
9	side 14	AS-i 3 - 0
10	side 12	AS-i 3 - 1
11	side 14	AS-i 3 - 2
12	side 12	AS-i 3 - 3
13	side 14	AS-i 4 - 0
14	side 12	AS-i 4 - 1
15	side 14	AS-i 4 - 2
16	side 12	AS-i 4 - 3



The manifold digital output valves consumes are 4+4+4+4 Bit max.

Auxiliary Digital INPUT (max 2 modules) produces-transmission data.

Module Position	Connection Port-Pin-Function	AS-i – Bit Produces
A	P1-4	AS-i 1 - 0
	P1-2	AS-i 1 - 1
	P2-4	AS-i 1 - 2
	P2-2	AS-i 1 - 3
	P3-4	AS-i 2 - 0
	P3-2	AS-i 2 - 1
	P4-4	AS-i 2 - 2
	P4-2	AS-i 2 - 3

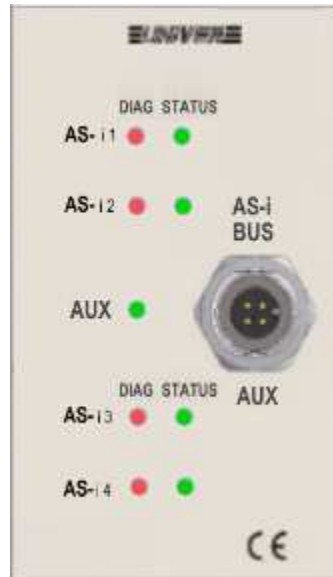
Module Position	Connection Port-Pin-Function	AS-i – Bit Produces
B	P1-4	AS-i 3 - 0
	P1-2	AS-i 3 - 1
	P2-4	AS-i 3 - 2
	P2-2	AS-i 3 - 3
	P3-4	AS-i 4 - 0
	P3-2	AS-i 4 - 1
	P4-4	AS-i 4 - 2
	P4-2	AS-i 4 - 3



The auxiliary digital input produces are 4+4+4+4 Bit max.



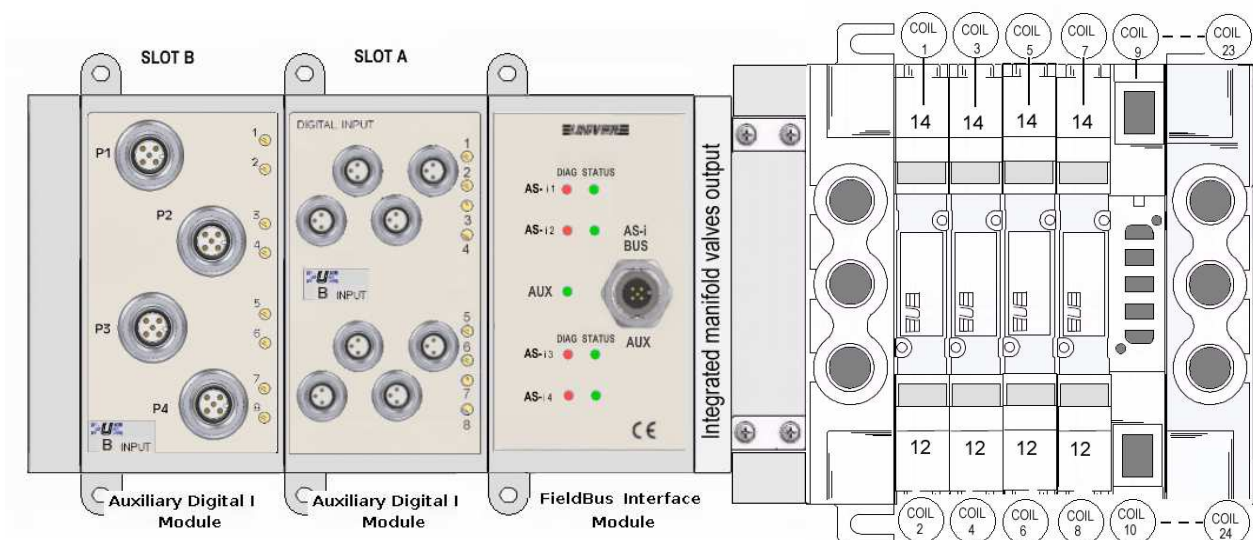
Module Diagnostic and Status indicators



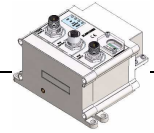
CONDITION	DIAG STATUS	DESCRIPTION
Power Off		No power supply available
Normal operation		Data communication is established
No data exchange		The <i>Data_Exchange_Disable</i> flag is still set, prohibiting Data Port communication. IC is waiting for a <i>Write_Parameter</i> request. The Communication Monitor has detected No Data Exchange status or the IC was reset by Watchdog IC Reset.
No data exchange (Address = 0)		Slave is waiting for address assignment. Data Port communication is not possible.
Periphery Fault		Periphery Fault signal generated at FID input.
Serious Periphery Fault with Reset		Data Strobe driven LOW for more than 44µs.

The flashing frequency of any flashing status indication is around 2 Hz.

Valves Coil & Input/Output Slot Allocation

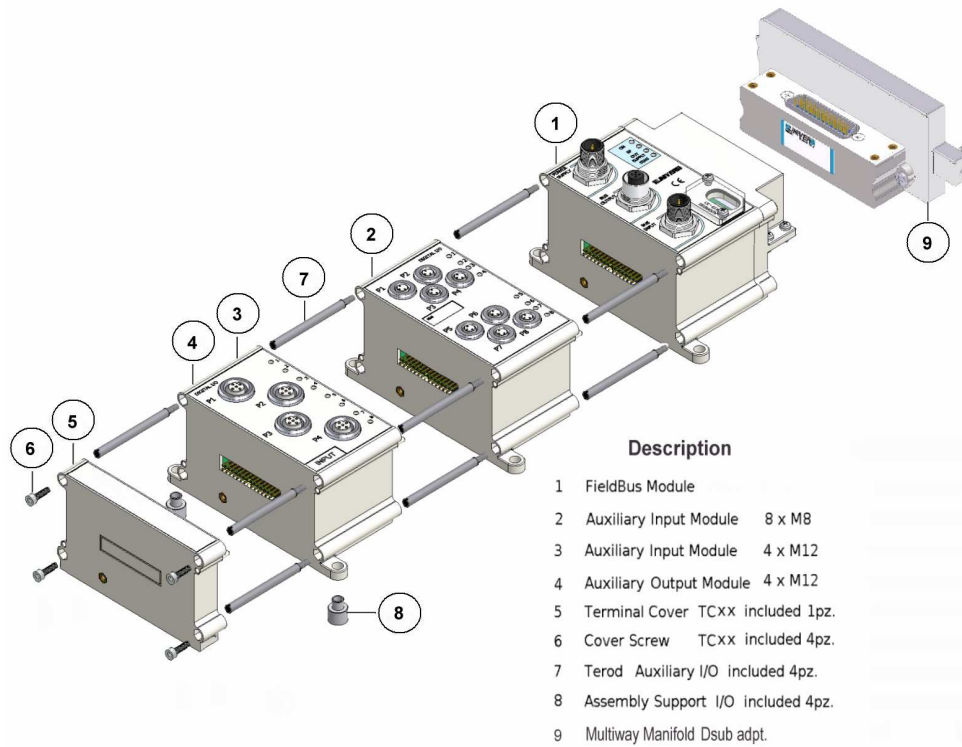


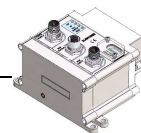
Each added Input modules increase proportionally Input Byte assignment.



Modules Assembly System

The auxiliary inputs and outputs modules will be connected to FieldBus module on the opposite side of the manifold valves.





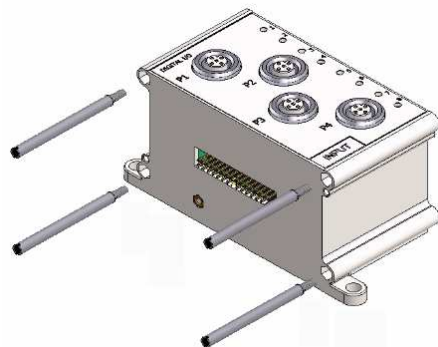
Auxiliary Digital Input Modules

COD. **TC8I412A**
N.8 Digital Input - M12



Input / Output
M12 (Female)
Looking into sockets

Pin	IN
1	VS24
2	INP 2
3	0VAS
4	INP 1
5	NC

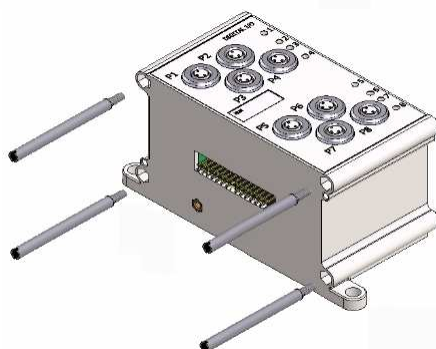


COD. **TC8I808A**
N.8 Digital Input - M8



Input M8 (Female)
Looking into sockets

Pin	IN
1	VS24
4	INP
3	0VAS



Auxiliary Digital Input Modules Specifications

Input Module Specification

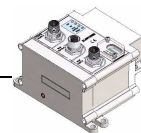
Part Code	TC8I412A	TC8I808A
Termination type	Circular 4 x M12	Circular 8 x M8
Input per Module	8	8
Switching Logic	2 or 3 wire PNP devices	
Operating Voltage Supply VS24	24V dc +/- 25%	
Power dissipation max per module	0,18W	
Sensor Source Current per input	20mA	
Signal logic "OFF"	-30V dc to 5V dc	
Signal logic "ON"	13V dc to 30V dc	
Typical input Current ON state max	5mA	
Typical input Current OFF state max	1,1mA	
Nominal Ipedence	5Kohm	
Delay Time ON to OFF	1mS	
Status Display	Valid Input – yellow indicator ON	

Environmental Conditions

weight	70g	
Overall Dimentions	30 x 123 x 75 mm	
Protection Degree	IP 65	IEC 60529
Relative humidity	5 to 85%	IEC 60068-2-30
Operating Temperature	5°C ÷ 50°C	IEC 60068-2-1
Storage Temperature	-25°C ÷ 80°C	IEC 60068-2-2
Vibration	5g tested 10-500Hz	IEC 60068-2-6
Shock operating	22g peak	IEC 60068-2-27



Make sure all connectors and caps are securely tightened to properly seal the connections against leaks and maintain IP65 requirements. I/O cable length should be less than 10 meters



AS-i FieldBus Accessories ordering code

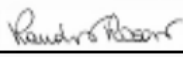
	Code	Description	Size	Type	Protection grade
	TZ-F4M12	AS-interface Profibus DP CANopen Interbus-S	M12 (4-pin, female)	Clamp screw	IP65
		POWER SUPPLY			
	TZ-F4M12-AS	AS-interface	M12 (4-pin, female)	AS-Interface cable connector, used for distribution of connections or as connector	IP65
		AS-i BUS			

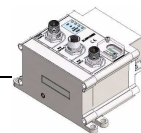
Identification Label

Model		CE	Protection Grade
Voltage Supply Range	Mod. TCxA	Voltage Supply	IP65
Nominal Current Supply -VL24	26,5..31,6VDC 250mA	S/N	22482
		2007	Production Year
			Serial No.

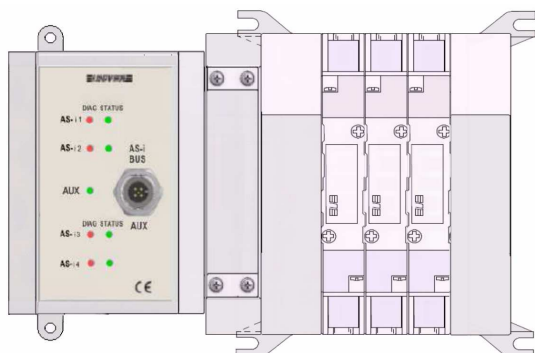
Conformity Declaration

Univer S.p.A. declares under the own responsibility that the ASi device in object is in compliance with the EMC directive 89/336/EEC, with amendaments for 92/31/EEC and 93/68/EEC through conformance with the following Harmonised European standards:

Date:	31 th 05 -2006	Harmonised European standards:
Device:	Remote I/O & Manifold Valves Control	
Term:	TCxA	EN 61000-4-2 (1996)
Manufacturer:	Univer S.p.A.	EN 61000-4-3 (1997)
	Via Eraclito, 31	EN 61000-4-4 (1996)
	20128 Milano	EN 61000-4-5 (1997)
	ITALY	EN 61000-4-6 (1997)
	tel. +39 02252981	EN 61000-4-8 (1997)
	fax. +39 0225298310	EN 61000-4-11 (1997)
		EN 55011-A2 (2003)
		EN 55011-A2 (2003)
R&D Manager signature:		

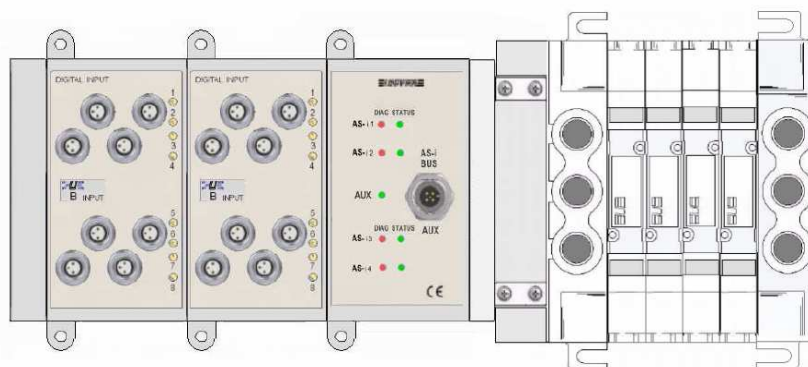
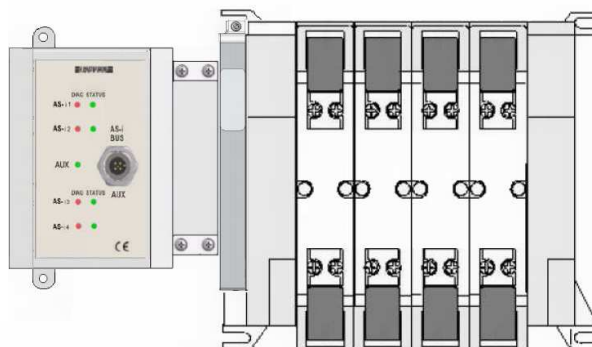


System configuration examples



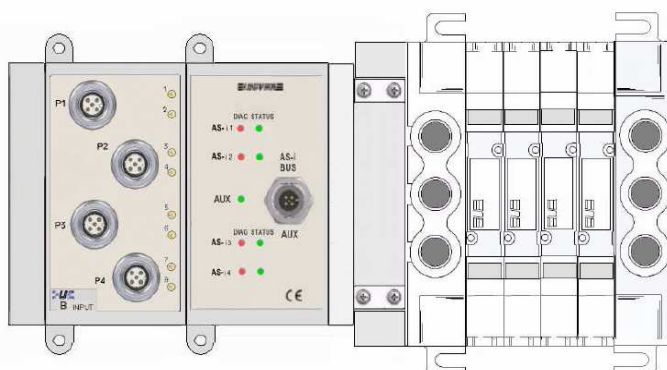
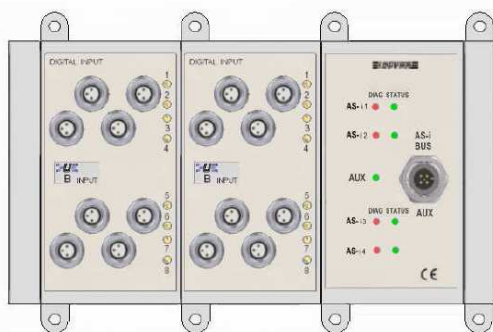
➔ Cod. **TCxA0008 / TCxA0016**
Compact MANIFOLD max 8-16 coil

Cod. **TCxA0008 / TCxA0016**
ISO VDMA MANIFOLD max 8/16 coils



➔ Cod. **TCxA16816**
16 DI M8+16 coils
Compact MANIFOLD series

Cod. **TCxA08S08**
8 DI M12+8 coils
Compact MANIFOLD series



➔ Cod. **TEXA16816**
16 DI M8



Dangers and residual risks

There aren't residual risks that may cause damage to the health of the person exposed. In case of maintenance, the operator is alerted by a visual sign placed near the high-risky areas, where there could be voltage dangers.



Dangers Caused by Improper use



It is recommended to use only original spare parts. They are to be considered including the "misuse conditions " of any modifications or changes of any kind, that the user arbitrarily.



Correct and Incorrect Use



The FieldBus Slave control unit, in all its models can be used only as reported on the operative manual manufacturer. The requirements of security and reliability of the unit are guaranteed only by using original components.



Frequency of programmed maintenance

The unit was designed and built so as not to require a specific scheduled maintenance.

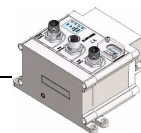


Instructions regarding removal / elimination of waste materials

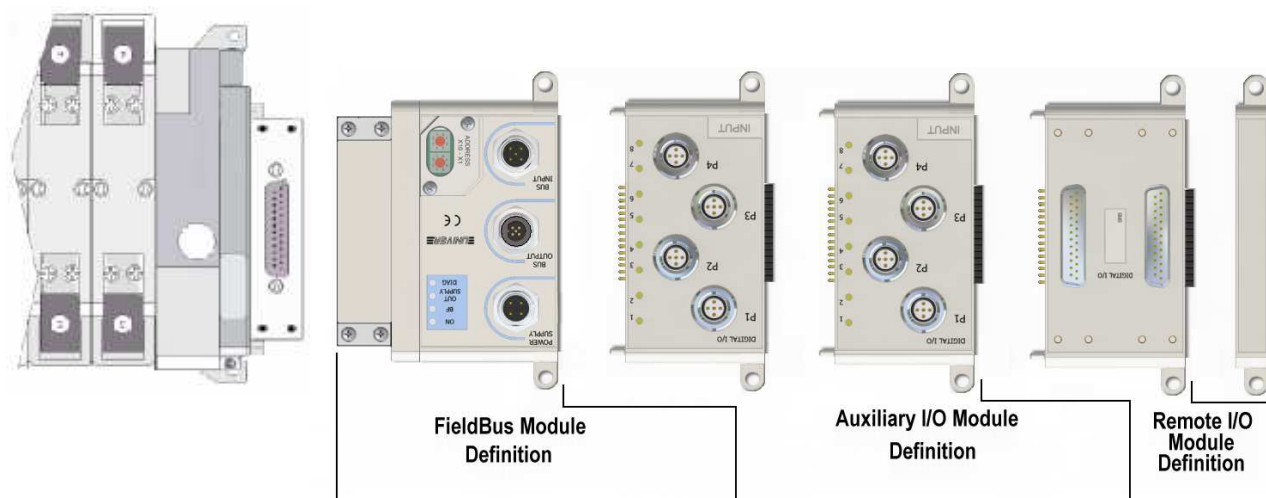
If you want to disassemble the unit is necessary to observe some basic rules to safeguard the health and the environment.



***Cables, liners and plastic components, must be disposed separately from all other materials
The metal parts must be grouped by type of material.***



Fieldbus ordering string definition



TC	X	P	00	8	00	32IN
----	---	---	----	---	----	------

SERIES

TC	Manifold plugin & I/O module
TE	I/O module

SIZE

X	Standard connection M12
M	Multibus connection M23

FIELDBUS

A	AS-interface	16+16 I/O
C	CANopen	64+64 I/O
D	DeviceNet	64+64 I/O
I	INTERBUS S	32+32 I/O
P	PROFIBUS dp	64+64 I/O

AUXILIARY DIGITAL INPUT

N° 08-16-24-32-40-48-56-64

DIGITAL INPUT TYPE

S	M12 standard digital input
A	M12 digital input with auxiliary supply connector
8	M08 digital input

AUXILIARY DIGITAL OUTPUT

N° 08-16-24-32-40-48-56-64

DIGITAL I/O REMOTE MODULE CONFIGURATION

32IN	One module - 16+16 digital input	32 DI
64IN	Two modules - 16+16 digital input plus 16+16 digital input	64 DI
32UD	One module - 16+16 digital output	32 DO
32US	One module - 16+16 digital output + switched connector	32 DO
64UD	Two modules - 16+16 digital output plus 16+16 digital output	64 DO
64US	Two modules - 16+16 digital output plus 16+16 digital output + switched connectors	64 DO
3232	One module - 16+16 digital input plus One module - 16+16 digital input	32DI+32DO
6464	One module - 16+16 digital output plus One module - 16+16 digital output	64DI+64DO